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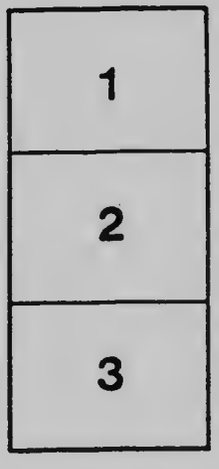

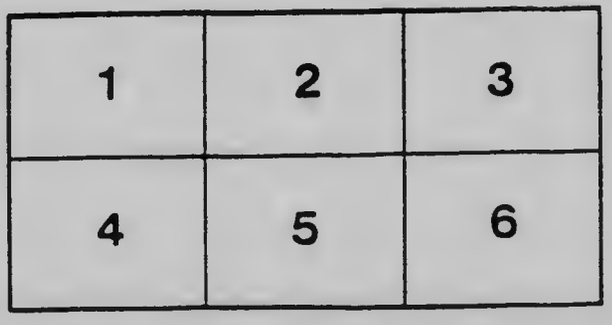

O. H. M. S.

W. J. Gerald

Deputy Minister.

LABORATORY

OF THE

INLAND REVENUE DEPARTMENT

OTTAWA, CANADA

BULLETIN No. 136

ALMOND FLAVOURING EXTRACTS

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LABORATORY

OF THE

INLAND REVENUE DEPARTMENT

OTTAWA, CANADA

BULLETIN No. 136

ALMOND FLAVOURING EXTRACTS

OTTAWA, July 10, 1907.

W. J. GERALD, Esq.,

Deputy Minister of Inland Revenue.

SIR,—I beg to submit a report upon sixty-five samples of Almond Flavouring Extracts, with accompanying note, and would respectfully suggest the publication of the whole as Bulletin No. 136.

I have the honour to be, sir,

Your obedient servant,

A. McGILL,

Acting Chief Analyst.

ALMOND FLAVOURING EXTRACTS

In consequence of some reported cases of apparent poisoning from the use of Almond Extracts, supposed to contain more than traces of hydrocyanic (prussic) acid, (L. 40850), a collection of sixty-five (65) samples of Essence of Bitter Almonds, sold for the purpose of flavouring pastry, icecream, &c., was made in April and May of this year. Five samples were purchased in each of the thirteen Inspectoral Districts.

These have been carefully examined for prussic acid, by Mr. Lemoine, of this Laboratory, and his results are given in the accompanying table.

I may explain that prussic acid is not an essential constituent of an almond flavouring extract, except in the sense that it is naturally produced by a ferment present in the almond seed, which acts on the glucoside amygdaline to produce benzaldehyde and prussic acid, together with glucose. The benzaldehyde is the essential component, so far as development of flavour is concerned. For culinary purposes, the prussic acid should be removed by special treatment.

In modern practice it is usual to substitute an artificial benzaldehyde, made from toluene, for the article produced as above, by fermentation of amygdaline. The artificial benzaldehyde is, (according to Squire's Companion to the British Pharmacopœia, 17th edition, p. 90) 'scarcely inferior as a flavouring agent, to the natural oil.' It has the advantage of being entirely free from prussic acid, and I cannot regard the employment of pure benzaldehyde in the preparation of almond flavouring essences, as fraudulent; although I consider it desirable that a distinction should be made between such an essence and one made from the almond kernel, by appending the descriptive word '*Artificial*' to the same.

Nitrobenzol (oil of mirbane) is sometimes used as a substitute for benzaldehyde in the preparation of artificial almond flavouring. Since this article is quite different in chemical character, from the natural flavour, its employment is to be regarded as an adulteration. Its odour is somewhat like that of benzaldehyde, but more pungent. Nitrobenzol has not been found in any of the samples now reported. Dyes have been found in nine samples. There can be no reason found for the use of dyes, in almond essence, except the gratification of a popular demand for colour. It is to be regretted that a false taste should exist in this regard. So far as wholesomeness is concerned, there is no ground for complaint, as regards the traces of colouring matter found.

Hydrocyanic acid (prussic acid) is entirely absent from sixty-one (61) of the sixty-five (65) samples now reported. In one of the remaining four samples, a mere trace was found, and in only three (3) was the quantity measurable. In these cases the amount is too small to have any practical danger to the user, and, although its presence may be taken to be a guarantee of the natural character of the article, I think it undesirable that even traces should remain in the flavouring essence.

Total number of samples analysed	65
Number entirely free from prussic acid	61
" containing measurable amounts	3
" " trace only	1
" " dyes	9

Explanatory Note.

Essences used for experimenting purposes were compounded according to the U.S Pharmaçopœia as follows :—

Stock	Benzaldehyde	1 part,	alcohol 80 parts,	water add 10%.
"	Nitrobenzol	"	"	"
"	Oil of Bitter Almonds	"	"	"

The methods followed in the above researches were those described by [illegible]h, 'Food Inspection and Analysis, pages 749-51'; with the exception, as regards [illegible]o-benzol that it was found easier to dip the test-tube in hot water instead of boiling the liquid on a naked flame. The appearance of a deep violet ring at the lower part of the tube was found to be a delicate test; three cubic centimetres of the essence of nitro-benzol giving an evident reaction. The two other prepared essences gave no reaction. Four cubic centimetres of the essence of nitro-benzol diluted to double quantity with an essence bought in the city also gave the reaction, the added essence having previously given no response to tests for nitro benzol.

The delicacy and accurateness of the silver cyanide test in the quantitative estimation of prussic acid was proved as follows. A few cubic centimetres of the distillate from a mixture of ferrocyanide of potassium and sulphuric acid were made up to 100ccs. and gave following results :—

1cc.	required	2·2	$\frac{N}{10}$ silver solution;	½ strength required 1·3
"		2·5	"	" 1·2
"		2·4	"	" 1·2
"		2·4	"	"

25ccs.	U.S.P. essence	required.....	3·5
"	"	.....	3·5
"	"	.....	3·4
"	"	.....	3·4

As 1cc. $\frac{N}{10}$ silver solution is equal to 0·0027 grmm. prussic acid, 3·5 × 0·0027 = 0·0094; 0·0094 × 4 = 0·038 grmm. per 100ccs. (1,680 minims).

The diluted hydrocyanic acid of the B.P. contains 2 per cent acid and is given at the dose of 2-6 minims = $\frac{1}{12}$ of a grain or 0·0054 grmm. for the maximum dose. It is not therefore probable that the three samples of essence containing respectively 0·0054, 0·0081, 0·0081 grmm. per 100 minims could become injurious. But it is to be desired that the oil of bitter almonds used in the manufacture of these essences should be absolutely free from prussic acid.

ALP. LEMOIN

July 8, 1907.

RECORD OF SAMPLES OF ALMOND FLAVOURING EXTRACT, ANALYSED BY THE LABORATORY OF THE INLAND REVENUE DEPARTMENT.

District of Nova Scotia—R. J. Waugh, Inspector.

Date of Collection.	Nature of Sample.	Number of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by Vendor.	Inspector's Report.	Results of Analysis. Nitro benzol.	Hydrocyanic Acid grms. per 100 minims.	Dyes.
1907.										
April 18	Almond Flavouring Extract.	27341	Brown Bros., Halifax..... ...	3 ozs.	45c.	Vendors...	....	None.	0·0054	None.
" 18	" " ..	27342	T. F. Courtney & Co., Halifax..	3 bots.	75c.	Church & Paul, London, Ont..	Labelled, Paul's Perfect Essences.	None.	None.	None.
" 19	" " ..	27343	I. Moser, Halifax.....	3 " .	30c.	Robinson Manufacturing Co., Toronto, Ont.	Labelled, our R. F. Concentrated Ext. for flavouring.	None.	None.	None.
" 23	" " ..	27344	J. H. Barss, Wolfville, N.S	3 " .	30c.	National Drug & Chemical Co., Halifax.	Sovereign Brand.....	None.	0·0084	None.
" 26	" " ..	27345	J. J. Kinley, Lunenburg, N.S..	3 ozs.	45c.	J. J. Kinley, Lunenburg, N.S.	. . ..	None.	0·0084	None.

District of Prince Edward Island—T. Moore, Inspector.

April 19	Almond Flavouring Extract.	31111	R. Tuplin, Kensington...	4 ozs.	40c.	Grey Manufacturing Co., Montreal.	... .	None.	None.	None.
" 20	" " ..	31112	R. T. Holman, Ltd., Summerside.	3 " .	30c.	Dearborn & Co, St. John. ...	....	None.	None.	None.
" 20	" " ..	31113	F. W. Strong, Summerside.....	3 " .	30c.	Tropical Extract Co., Toronto.	... .	None.	None.	Present
" 20	" " ..	31114	W. H. Pigott, Mount Stewart..	4 " .	40c.	Dearborn & Co., St. John....	....	None.	None.	None.
" 20	" " ..	31115	A. A. McDonald Bros., Georgetown.	3 " .	30c.	McLarren's, Halifax	... .	None.	None.	None.

District of New Brunswick—J. C. Ferguson, Inspector.

April 16	Almond Flavouring Extract.	24359	Dearborn & Co., 95 Prince William street, St. John, N.B.	3 bots.	45c.	Dearborn & Co., St. John, N.B.	Pure Flavouring Extract	None.	None.	None.
" 16	" "	24360	G. E. Barbour & Co., Ltd., North Wharf' St. John, N.B.	3 "	54c.	G. E. Barbour Co., St. John, N.B.	Fine Flavouring Extract	None.	None.	None.
" 23	" "	24392	Sussex Mercantile Co., Main street, St. John,	3 "	60c.	Sussex Mercantile Co., St. John, N.B.	Pure Concentrated Extract	None.	None.	None.
May 9	" "	24393	Inches & Grimmer, Water St. Stephens, N.B.	3 "	45c.	Pure Gold Manufacturing Co., Ltd., Toronto.	Pure Gold Flavouring Extract.	None.	None.	Present.
" 11	" "	24394	W. H. Vanwart, Queen street, Fredericton, N.B.	3 "	40c.	" " "	"	None.	None.	Present.

District of Quebec—E. Beland, Inspector.

April 5	Almond Flavouring Extract.	26195	J. A. Chabot, 271 St. Joseph street.	3 bots.	75c.	Imperial Extract Co., New York.		None	None	None.
" 22	" "	26248	Jos. Savard, 35 St. Jean street.	3 "	75c.	Albert Dunn, Agent		None.	None.	None.
" 23	" "	26249	E. Lafrance, 272 St. Jean street.	3 "	75c.	" "		None.	None.	None.
" 23	" "	26250	Jas. Miller, 152 St. Jean street.	3 "	75c.	" "		None.	None.	None.
" 23	" "	26251	Jas. Miller, 152 St. Jean street.	3 "	45c.	" "		None.	None.	None.

District of St. Hyacinthe—J. C. Rouleau, Inspector.

April 17	Almond Flavouring Extract.	593	McRea Bros., Richmond	3 bots.	30c.	Robt. Creig Co., Ltd., Toronto, Ont.		None.	None	None.
" 17	" "	594	W. S. Sampson, Windsor Mills.	3 "	30c.	Robt. Creig Co., Ltd., Toronto, Ont.		None.	None.	None.
" 18	" "	595	Dr. J. P.H. Massicotte, Victoriaville.	3 "	30c.	F. M. Peltier, Victoriaville		None.	None.	None.
" 20	Bitter Almond Flavouring Extract.	596	L. H. Olivier, Sherbrooke	3 "	75c.	Pure Gold Mfg. Co., Toronto, Ont.		None.	None.	Present.
" 24	Almond Flavouring Extract.	597	P. A. Galipeau, Farnham	3 "	25c.	Henri Jonas & Co., Montreal		None.	None.	None.

District of Montreal—J. J. Costigan, Inspector.

April 13	Almond Flavouring Extract.	32501	Henri Jonas & Co., St. Paul street, Montreal.	1½ lb.	50c.	Vendor		None.	None.	None.
" 22	" "	32502	Colonial Fluid Beef and Specialty Co., Montreal.	3 bots.	30c.	"		None.	None.	None.
" 22	" "	32503	Lyon Silverman, Notre Dame street, Montreal.	3 "	35c.	"		None.	None.	None.
" 22	" "	32504	M. J. McKerley, 120 Park Ave., Montreal.	3 "	30c.	Hamilton Coffee and Spice Co.		None.	None.	None.
" 22	" "	32505	S. Carsley & Co., Limited, Notre Dame street, Montreal.	3 "	25c.	Imperial Extract Co., Toronto		None.	None.	None.

RECORD OF SAMPLES OF ALMOND FLAVOURING EXTRACTS, ANALYSED BY THE LABORATORY OF THE INLAND REVENUE DEPARTMENT—*Continued.*

District of Ottawa—E. Belisle, General Inspector.

Date of Collection.	Nature of Sample.	Number of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by Vendor.	Inspector's Report.	Results of Analysis. Nitro benzol.	Hydrocyanic Acid grms. per 100 minims.	Dyes.
1907.										
April 9	Almond Flavouring Extract.	32362	W. H. Dunkin, Cornwall	3 bots.	30c.	Imperial Extract Co., Toronto.		None.	None.	None.
May 7	" "	32240	Hull Medical Hall	9 ozs.	50c.	Vendor		None.	None.	None.
" 7	" "	32241	A. R. Farley, 178 Albert street, Hull, P.Q.	8 "	75c.	"		None.	None.	None.
" 7	" "	32242	J. Skinner & Son, Ottawa, Ont.	8 "	80c.	"		None.	None.	None.
April 15	" "	32377	Bryson, Graham & Co., Sparks street.	3 bots.	60c.	Pure Gold Mfg. Co., Toronto, Ont.		None.	None.	Present.

District of Kingston—Jas. Hogan, Inspector.

April 2	Almond Flavouring Extract.	31084	W. J. Nesbitt, Johnston street, Kingston.	3 ozs.	30c.	McLarens		None.	None.	None.
" 3	" "	31096	Willbridge & Clark, Front st., Belleville.	5 "	45c.	Davis & Lawrence, Montreal		None.	None.	None.
" 4	" "	32411	Adams Bros., Kent street, Lindsay.	3 "	30c.	Cormon & Eckert, London, Ont.		None.	None.	None.
" 4	" "	32416	White & Gillespie, George street Peterboro'.	3 "	30c.	T. E. Co., Toronto		None.	None.	None.
" 4	" "	32418	Mason Co., George street, Peterboro'.	3 "	30c.	A. C. & S. Co		None.	None.	None.

District of Toronto—H. J. Dugar, Inspector.

May 8	Almond Flavouring Extract.	33262	Spencer Smith, Toronto. . . .	3 bots.	45c.	Benson Mfg. Co., Toronto. .	Labelled 20th Century. . .	None.	None.	None.
" 8	" " . .	33263	J. J. Burton, Toronto.	3 " .	39c	Tropical Extract Co., Toronto	Labelled Oriental.	None.	None	Present.
" 9	" " . .	33264	W. E. Medland, Toronto.	3 " .	30c.	Dalton Bros., Toronto.	Labelled Nonpareil.	None.	None.	Present.
" 20	" " . .	33265	J. L. Brown, Hamilton.	3 " .	30c.	H. C & S. Co., Hamilton. . . .	. . . . .	None.	None.	None.
" 20	" " . .	33266	Peebles, Hobson & Co., Hamilton.	3 " .	75c.	—. Seely, Detroit and Windsor	. . . . .	None.	None.	None.

District of London—Thos. Kidd, Inspector.

April 17	Almond Flavouring Extract.	30304	Williams & Purcell, Seaforth. . .	3 bots.	30c.	Imperial Extract Co., Toronto.	. . . . .	None.	None.	None.
" 18	" " . .	30306	J. W. Irwin, Clinton	3 " .	30c	Canada Spice & Grocery Co., London, Ont.	. . . . .	None.	None.	None.
" 19	" " . .	30310	Walsh Bros., Stratford.	3 " .	30c.	F. F. Dalley & Co., Hamilton, Ont.	. . . . .	None.	None.	None.
" 19	" " . .	30313	Gorman, Eckart & Co., London, Ont.	3 " .	30c.	W. R. Coll, Mitchell	. . . . .	None.	None.	None.
" 23	" " . .	30320	Geo. A. Young, Chatham. . .	3 " .	30c.	Sheriffs, Toronto.	. . . . .	None.	None.	None.

District of Manitoba—W. M. Conklin, Inspector.

May 15	Almond Flavouring Extract.	25801	T. Eaton & Co., Winnipeg. . .	2½ ozs.	60c.	Codville, Georgesen & Co., Winnipeg.	. . . . .	None.	None.	None.
" 15	" " . .	25802	E. B. Nixon, Winnipeg.	2½ " .	75c	McLaren	. . . . .	None.	None.	None.
" 15	" " . .	25803	J. Robinson & Co., Winnipeg. . .	4 " .	$1.05	F. F. Dalley & Co., Hamilton.	. . . . .	None.	None.	None.
" 16	" " . .	25804	A. McDonald, Winnipeg. . . .	2½ " .	75c.	McLaren.	. . . . .	None.	Trace.	None.
" 16	" " . .	25805	T. Hurtley & Co., Winnipeg. . .	2½ " .	75c.	Sheriff	. . . . .	None.	None.	None.

RECORD OF SAMPLES OF ALMOND FLAVOURING EXTRACT, ANALYSED BY THE LABORATORY OF THE INLAND REVENUE DEPARTMENT—*Concluded.*

District of Calgary—R. W. Fletcher, Inspector.

Date of Collection.	Nature of Sample.	Number of Sample.	Name and Address of Vendor.	Cost. Quantity.	Cost. Cents.	Name and Address of Manufacturer or Furnisher as given by Vendor.	Inspector's Report.	Results of Analysis. Nitro benzol.	Hydrocyanic Acid grms. per 100 minims.	Dyes.
1907.										
May 9	Almond Flavouring Extract.	28761	A. Urquhart & Co., Lacombe...	3 bots.	90c.	.....	.....	None.	None.	None.
" 9	" " ..	28762	J. G. Pratt, Lacombe.....	3 " .	75c.	Blue Ribbon Mfg. Co., Winnipeg.	.....	None.	None.	None.
" 11	" " ..	28763	L. Lambert, Edmonton.....	3 " .	60c.	McLaren, Hamilton.....	.....	None.	None.	None.
" 11	" " ..	28764	Capital Mercantile Co., Edmonton.	3 " .	60c.	Pure Gold Mfg. Co., Toronto.	.....	None.	None.	Present.
" 11	" " ..	28765	Hudson Bay Co., Edmonton...	3 " .	50c.	Blue Ribbon Mfg. Co., Winnipeg.	.....	None.	None.	None.

District of British Columbia—E. B. Parkinson, Inspector.

April 16	Almond Flavouring Extract.	32027	H. J. Hutcherson, Ladner, B.C.	3 bots.	60c.	J. H. Todd & Sons, Victoria, B.C.	.....	None.	None.	Doubtful.
" 27	" " ..	32083	City Grocery, Granville Street, Vancouver.	3 " .	75c.	McLaren, Hamilton	.....	None.	None.	None.
" 27	" " ..	32084	Empress Mfg. Co., Homer st. Vancouver.	3 " .	50c.	Vendor.	'Empress Brand' bought at the factory.	None.	None.	Present.
" 27	" " ..	32085	The Star of India Tea Co.. Granville Street, Vancouver.	3 " .	60c.	"	'Puritan Brand'	None.	None.	None.
May 18	" " ..	32101	The H. A. Edgett Co., Hastings Street, Vancouver.	3 " .	75c.	Seely, Detroit and Windsor ...	.....	None.	None.	None.